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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,606	03/17/2004	Osamu Kusumoto	60188-807	4190

7590 03/29/2006

Jack Q. Lever, Jr.  
McDERMOTT, WILL & EMERY  
600 Thirteenth Street, N.W.  
Washington, DC 20005-3096

EXAMINER

LEE, EDDIE C H

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/801,606	<b>Applicant(s)</b> KUSUMOTO ET AL.	
	<b>Examiner</b> Eddie C. Lee	<b>Art Unit</b> 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 10-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

***Drawings***

The corrected drawings filed on Jan. 4, 2006 are acceptable.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the acknowledged prior art of Fig. 9 in view of Maeda (6,060,765).

The acknowledged prior art discloses a silicon carbide semiconductor device comprising a silicon carbide layer 101-105, an electrode 108, interlayer dielectric film 110, interconnect 111, wherein the electrode 108 comprises multiple portions, including a lower, or first portion, and upper, or second portion. However, the acknowledged prior art does not disclose "the first electrode portion and the second electrode portion are formed from different materials."

Maeda discloses a semiconductor device comprising an electrode wherein "the first electrode portion [4] and the second electrode portion [100] are formed from different materials." In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the acknowledged prior art by having "the first electrode portion and the second electrode portion [ ] formed

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from different materials.” The ordinary artisan would have been motivated to modify the acknowledged prior art in the manner described about in order to “effectively contemplate low resistance” (col. 6, lines 62-63 of Maeda).

Regarding claim 2, a further difference between the acknowledged prior art as modified above and the claimed invention is “the second electrode portion covers the ... side faces of the first electrode portion.” This difference is nothing more than an obvious design variation requiring minimal or routine experimentation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the acknowledged prior art by having “the second electrode portion cover[ ] the ... side faces of the first electrode portion.” The ordinary artisan would have been motivated to further modify the acknowledged prior art in the manner described for at least the purpose of increasing the surface area contact between the two electrode portions.

Regarding claim 5, Maeda discloses at least one of the metals recited in the claim in column 6, line 60.

Regarding claim 8, a further difference between the acknowledged prior art as modified above and the claimed invention is “the second electrode portion is made of the same material as the gate electrode.” However, Ti, Co, Ni or W is a commonly used and well know material in the art when it comes to forming electrodes. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the acknowledged prior art by having the gate electrode made of

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the same material as the second electrode for at least the purpose of using a highly effective, reliable material for the gate electrode.

Regarding claim 9, the features recited herein are conventional features disclosed in the acknowledged prior art of Fig. 9.

***Response to Arguments***

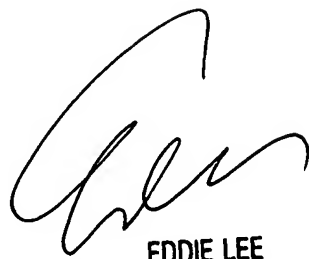
Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication should be directed to Eddie C. Lee at telephone number 571-272-1732.



EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800